

09/210373

L7 ANSWER 1 OF 1 WPIDS COPYRIGHT 1999 DERWENT INFORMATION LTD
 AN 1995-180695 [24] WPIDS
 DNN N95-141840 DNC C95-083683
 TI Electrically conductive silicone rubber compsn. - contg. silver powder
 having low ammonium ion and sulphate ion concn. and having reduced change
 in curability during ageing.
 DC A26 A85 L03 X25
 IN MINE, K; NAKAYOSHI, K; TAZAWA, R
 PA (DOWO) DOW CORNING TORAY SILICONE
 CYC 6
 PI EP 653463 A2 950517 (9524)* EN 15 pp C08L083-07 <--
 R: DE ES FR GB IT
 JP 07133432 A 950523 (9529) 14 pp C08L083-07
 EP 653463 A3 960417 (9626) C08L083-07 <--
 JP 2819444 B2 981030 (9848) 14 pp C08L083-07
 ADT EP 653463 A2 EP 94-117550 941107; JP 07133432 A JP 93-302352 931108; EP
 653463-A3 EP 94-117550 941107; JP 2819444 B2 JP 93-302352 931108
 FDT JP 2819444 B2 Previous Publ. JP 07133432
 PRAI JP 93-302352 931108
 REP EP 367562; EP 545568; US 4777205
 IC ICM C08L083-07
 ICS C08K003-08; C08L083-05; H01B001-22; H05K009-00
 AB EP 653463 A UPAB: 19950626
 An electrically conductive silicone rubber compsn. comprises (A) 100
 pts.wt. of an organopolysiloxane contg. at least 2 alkenyl gps. per mol.,
 (B) a concn. of an organohydrogensiloxane contg. at least 2 Si-bonded H
 atoms per mol. equiv. to 0.5-3 Si-bonded H atoms per alkenyl radical
 present in component (A), (C) 50-2000 pts.wt. of a silver powder wherein
 the NH4+ concn. is less than 10 ppm and the SO42 concn. is less than 5
 ppm, as determined by extraction with water for 20 h at 121deg.C, 202.6
 kPa pressure and 100% RH, and (D) 1-100 ppm of a catalyst selected from
 metals from the Pt gp. and their cpds. to promote curing of the compsn.
 USE - The compsn. is used as a conductive adhesive, conductive die
 bonding agent, radiating die bonding agent and electromagnetic shielding
 material.
 ADVANTAGE - The curing characteristics of the compsn. vary little
 with the age of the compsn.
 Dwg.0/0
 FS CPI EPI
 FA AB
 MC CPI: A06-A00B; A08-C09; A08-M09A; A09-A03; L03-A01A3; L03-G
 EPI: X25-A07

no fluoro resin

09/210,373

=> d 19 1-2

1. 5,614,881, Mar. 25, 1997, Current limiting device; Anil R. Duggal, et al., 338/22R, 20, 21, 22SD [IMAGE AVAILABLE]

2. 5,227,093, Jul. 13, 1993, Curable organosiloxane compositions yielding electrically conductive materials; Richard L. Cole, et al., 252/512; 106/1.18, 1.19; 252/514; 427/212, 215, 216; 528/10 [IMAGE AVAILABLE]

=> d his

(FILE 'USPAT' ENTERED AT 20:17:00 ON 09 JUN 1999)

| | |
|----|--|
| L1 | 1539 S SILVER PARTICLE# |
| L2 | 5757 S ORGANOPOLYSILOXANE# OR FLUORINATED POLYETHER# |
| L3 | 7 S L1 AND L2 |
| L4 | 0 S L1 AND L2/TI |
| L5 | 1 S L1 AND L2/AB |
| L6 | 0 S L1(5A)L2 |
| L7 | 2 S L1(25A)L2 |
| L8 | 0 S L1(10A)L2 |
| L9 | 2 S L1(P)L2 |

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Printing Started: Wed Sep 9 15:47:56 1998

Art Unit: 1711
=> d acc 4777205

1. 4,777,205, Oct. 11, 1988, Electrically conductive compositions;
Matthew A. La Scola, et al., 524/440; 252/503, 511, 514; 524/449, 780,
789 [IMAGE AVAILABLE]

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User Phone:

Workstation Id: GPRBURGM

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Date: Mon Sep 14, 1998

Time: 14:38:30

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Documents Requested

(01) 05714093 U

(02) 04851065 U

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Sections Requested

Front Page, Drawings, Specifications, Claims, Changes/Corrections, Reexaminations

ssp

=> d 14 1-7

1. 5,741,499, Apr. 21, 1998, Homogeneous composition comprising fluorinated compounds and glycols, method of preparation thereof and use in cosmetics; Pascal Arnauld, et al., 424/401, 63, 64; 514/845, 847 [IMAGE AVAILABLE]
2. 5,702,803, Dec. 30, 1997, Electrostatic color imaging paper with an intrinsic release dielectric layer; John F. Eisele, et al., 428/195, 446, 447, 450; 430/66, 67 [IMAGE AVAILABLE]
3. 5,639,810, Jun. 17, 1997, Internally lubricated elastomers for use in biomedical applications; Hubert S. Smith, III, et al., 524/269, 297, 462, 463, 483, 484; 604/86, 88 [IMAGE AVAILABLE]
4. 5,518,781, May 21, 1996, Stripping fingers for copying machine; Kazuyoshi Nakamura, et al., 524/497; 252/299.01; 271/307, 308, 309, 310, 311, 312, 313, 900; 428/192, 195, 323, 327, 421, 422, 480 [IMAGE AVAILABLE]
5. 5,364,670, Nov. 15, 1994, Stripping fingers for copying machine; Fuminori Satoji, et al., 399/398; 428/194, 421, 422 [IMAGE AVAILABLE]
6. 5,262,259, Nov. 16, 1993, Toner developed electrostatic imaging process for outdoor signs; Hsin-hsin Chou, et al., 430/47, 42, 126 [IMAGE AVAILABLE]
7. 4,962,178, Oct. 9, 1990, Novel polysiloxane-polyurethanes and contact lens thereof; Paul Harisiades, 528/33; 525/453, 474, 477; 528/28 [IMAGE AVAILABLE]

=> d 14 1-7 hit

US PAT NO: 5,741,499 [IMAGE AVAILABLE]

L4: 1 of 7

SUMMARY:

BSUM(75)

Functionalized **fluorinated polyethers** have formula (III):

SUMMARY:

BSUM(110)

The following silicone compounds may also be mentioned: cyclic dimethylpolysiloxanes, low or high viscosity dimethylpolysiloxanes, silicone gums, **organopolysiloxanes** such as phenylmethylpolysiloxanes and phenyltrimethylsiloxypolysiloxanes, alkylmethylpolysiloxanes, alkoxymethylpolysiloxanes, silicones including functional groups such as alcohol, amine or thiol moieties.

$\text{HO}(\text{CH}_2)_n\text{OH}$, wherein n is an integer greater than 1 and not exceeding 10 in the presence of a substantially complete dispersion of chemically inert and insoluble particles free of optically polarizing properties selected from the group consisting of silica, kaolin, china clay, aluminosilicates, diatomaceous earth and carbon black, said particles having a diameter in the range from 10 to 20 millimicrons and present in amounts from 0.05 to 0.3 percent by weight, for a sufficient period of time under sufficient heat to produce bis(hydroxyalkyl) terephthalate while removing the excess water and polymerizing the resulting product for a period of time in the presence of an anti-mony catalyst until a high molecular weight polymer is produced.

15. The process of claim 14 wherein the particles are silica.

16. The process of claim 14 wherein the dispersion of inert particles are subjected to ultrasonic vibrations.

17. The process of claim 14, wherein the glycol is ethylene glycol.

18. The process of claim 14 wherein dimethyl terephthalate is substituted for terephthalic acid.

19. The process of claim 18 wherein the glycol used is ethylene glycol.

20. A high molecular weight synthetic linear polymer having an intrinsic viscosity in the range from 0.2 to 1.0 and containing insoluble and chemically inert particles free of optically polarizing properties selected from the group consisting of silica, kaolin, china clay, aluminosilicates, diatomaceous earth and carbon black, said particles having a diameter in the range from 5 to 200 millimicrons and in amounts ranging from 0.01 to 0.5 percent by weight, said particles being substantially completely dispersed throughout said polymer.

21. The polymer of claim 20, wherein the composition is polyethylene terephthalate.

22. The polymer of claim 21, wherein the amounts of dispersed particles in said polymer ranges from 0.05 to 0.3 percent by weight of said polymer and having a diameter in the range from about 10 to 20 millimicrons.

References Cited

UNITED STATES PATENTS

| | | | |
|-----------|---------|---------|---------|
| 3,154,461 | 10/1964 | Johnson | 260—37 |
| 2,974,105 | 3/1961 | Iler | 260—40 |
| 3,201,506 | 8/1965 | Bills | 264—210 |

FOREIGN PATENTS

| | | |
|---------|---------|----------------|
| 518,528 | 11/1955 | Canada. |
| 504,714 | 4/1939 | Great Britain. |

MORRIS LIEBMAN, *Primary Examiner*.

L. T. JACOBS, *Assistant Examiner*.

U.S. Cl. X.R.

161—164, 402; 260—40

SUMMARY:

BSUM(13)

In addition to patents dealing with separate release layers using silicone release agents, U.S. Pat. No. 3,476,659; U.S. Pat. No. 3,851,964; U.S. Pat. No. 3,935,154; and U.S. Pat. No. 4,078,927 all disclose the use of silicones as additives to the photoconductive layer itself to give release properties towards both toners and inks (electrographic printing plates). The first two of these patents disclose the admixture of silicone oils, waxes, or resins to the photoconductive material. U.S. Pat. No. 3,935,154 discloses block copolyesters containing silicone units in their chains which are useful as release and leveling agents and form compatible admixtures to organic and inorganic photoconductive materials. They are of particular interest in planographic printing materials. In U.S. Pat. No. 4,078,927 planographic printing materials are also disclosed which comprise photoconductive materials containing block copolymers of "soft segments" from a siloxane monomer and "hard segments" from non-siloxane monomers such as polystyrenes, polyvinylcarbazoles, polycarbonates, and polysulfones. These non-siloxane "hard segments" are disclosed as photoconductive under ultra-violet illumination and can be made visible light sensitive by addition of activators or spectral sensitizers. U.S. Pat. No. 4,772,526 (Sep. 20, 1988) discloses photoconductive layer assemblies for electrophotographic systems in which the top layer, either the charge transport layer or the charge generation layer, comprises a block copolymer of a **fluorinated polyether** and a polyester or a polycarbonate. The surface exhibits good toner release properties because of the presence of the **fluorinated polyether**, and also "is compatible with the desired functions of the charge generation and charge transport materials".

SUMMARY:

BSUM(28)

The release entity in either the intrinsic release dielectric polymer or the release material in a mixture may be chosen alternatively from polymers containing fluorinated moieties such as **fluorinated polyethers**.

DETDESC:

DETD(21)

The preferred **organopolysiloxane**-polyurea block polymers comprise a repeating unit of the formula: ##STR2## where: Z is a divalent radical selected from the group consisting of phenylene, alkylene, aralkylene and cycloalkylene;

DETDESC:

DETD(30)

The **organopolysiloxane**-polyurea block polymer useful in the present invention must be organic non-aqueous solvent-compatible. Water-compatible polymers containing ionic groups in the polymer chain and are not satisfactory.

DETDESC:

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| <u>03515626</u> | <u>000</u> | <u>000</u> | <u>000</u> | <u>000</u> | <u>003</u> |
| <u>03419460</u> | <u>000</u> | <u>000</u> | <u>000</u> | <u>000</u> | <u>004</u> |

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DETD(41)

Specifically solvent-compatible block polymers useful in the invention may be prepared by mixing the **organopolysiloxane** diamine, diamine and/or dihydroxy chain extender, if used, and diisocyanate under reactive conditions, to produce the block polymer with hard and soft segments respectively derived from the diisocyanate and **organopolysiloxane** diamine. The reaction is typically carried out in a reaction solvent.

US PAT NO: 5,639,810 [IMAGE AVAILABLE]

L4: 3 of 7

SUMMARY:

BSUM(27)

U.S. Pat. Nos. 4,810,752 and 4,978,714 of Bayan et al. which describe elastomeric compositions with low hardness, low coefficients of friction, and reduced stickiness which provide good barriers to moisture and oxygen. The composition combines a dynamically vulcanized butyl rubber with uncured **organopolysiloxane** grafted EPDM polymers.

DETDESC:

DETD(13)

Fluorocarbon fluids having viscosities in the range of about 10 to 10,000 cs (RT) are suitable for use in this invention and include fluorinated hydrocarbon oils, **fluorinated polyethers**, and perfluorinated hydrocarbons and perfluorinated polyethers, among others. Fluorocarbon lubricating fluids may be combined with any elastomer compatible in biomedical applications but are preferably combined with fluorocarbon elastomers.

US PAT NO: 5,518,781 [IMAGE AVAILABLE]

L4: 4 of 7

SUMMARY:

BSUM(21)

On the other hand, numerous proposals have been made to improve the non-stick property of the stripping fingers with respect to toner. For example, it was proposed to form on a stripping finger a coating of fluoro-resin or **fluorinated polyether** polymer or to incorporate a non-stick property modifier such as a fluoro-resin in the material.

SUMMARY:

BSUM(43)

One or more of the following substances may be added together with the abovesaid heat-resistant fibers: additives such as antioxidants, heat stabilizers, ultraviolet absorbers, lubricants, release agents, coloring agents, flame-retardants, flame-retardant assistants, antistatic agents and crystallization promoters which are added to ordinary resin compositions, wear resistance improvers (such as carborundum, quartzite powder, molybdenum disulfide and fluoro-resin), tracking resistance improvers (such as silica), and other fillers (substances which are stable at 300.degree. C. or over such as glass beads, glass balloons, calcium carbonate, alumina, talc, diatomaceous earth, clay, kaolin, gypsum, calcium sulfite, mica, metallic oxides, inorganic pigments), agents for imparting thixotropic properties such as fine silica powder, fine talc and diatomaceous earth, and polyether oil and

Art Unit 1711

Claims 3 and 4 are rejected under 35 U.S.C. 101 because the claimed recitation of a use, without setting forth any steps involved in the process, results in an improper definition of a process, i.e., results in a claim which is not a proper process claim under 35 U.S.C. 101. See for example *Ex parte Dunki*, 153 USPQ 678 (Bd. App. 1967) and *Clinical Products, Ltd. v. Brenner*, 255 F. Supp. 131, 149 USPQ 475 (D.D.C. 1966).

Regarding claim 4, the phrase "or the like" renders the claim(s) indefinite because the claim(s) include(s) elements not actually disclosed (those encompassed by "or the like"), thereby rendering the scope of the claim(s) unascertainable. See MPEP § 2173.05(d).

Claim Rejections - 35 U.S.C. § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-4 are rejected under 35 U.S.C. 103(a) as being unpatentable over Perez-Wilson (U.S.P. 5,392,584) in view of Parkinson et al. (U.S.P. 4,692,372).

Perez-Wilson discloses a method and apparatus to produce panels which simulate overlapping red clay roof tile. Such a tile is prepared from a composition including 30 to 75% by wt. of synthetic resin, 15-50% by wt. of a filler, ^{and} 0.5 to 5.0% by wt. of a catalyst (column 1, lines 62-68). Aluminum trihydrate as a filler is suggested in column 2, line 22.

organopolysiloxane in order to increase and stabilize its self-reinforcing properties, and heat resistant amorphous polyether resins.

US PAT NO: 5,364,670 [IMAGE AVAILABLE]

L4: 5 of 7

SUMMARY:

BSUM(14)

On the other hand, numerous proposals have been made to improve the non-stick property of the stripping fingers with respect to toner. For example, it was proposed to form on a stripping finger a coating of fluoro-resin or **fluorinated polyether** polymer or to incorporate a non-stick property modifier such as a fluoro-resin in the material. One conventional method which aims specifically to improve the non-stick property with respect to toner is to heat tetrafluoroethylene-perfluoroalkylvinylether copolymer (hereinafter abbreviated to PFA) above its melting point to fuse it to the stripping fingers. Since this technique does not use a binder resin (such as epoxy resin, polyimide resin or polyamideimide resin), which is used ordinarily in other techniques, the surface of the coating material solely consists of PFA resin. Thus, its non-stick property is excellent. But in order to firmly bond the PFA film to the stripping fingers so that the PFA can exhibit its inherent excellent non-stick property, it has to be heated to 330.degree. C. or more. Very few resins can withstand such high temperatures. Even a stripping finger made of a liquid crystal polyester may deflect, shrink or develop blisters on the surface during the heat melting step.

SUMMARY:

BSUM(31)

One or more of the following substances may be added together with the abovesaid heat-resistant fibers: additives such as antioxidants, heat stabilizers, ultraviolet absorbers, lubricants, release agents, coloring agents, flame-retardants, flame-retardant assistants, antistatic agents and crystallization promoters which are added in ordinary resin compositions, wear resistance improvers (such as carborundum, quartzite powder, molybdenum disulfide and fluoro-resin), tracking resistance improvers (such as silica), and other fillers (substances which are stable at 300.degree. C. or over such as glass beads, glass balloons, calcium carbonate, alumina, talc, diatom earth, clay, kaolin, gypsum, calcium sulfite, mica, metallic oxides, inorganic pigments), agents for imparting thixotropic properties such as fine silica powder, fine talc and diatom earth, and polyether oil and **organopolysiloxane** for improving the orientation peculiar to the liquid crystal polyester to increase and stabilize its self-reinforcing properties, and heat resistant amorphous polyether resins.

US PAT NO: 5,262,259 [IMAGE AVAILABLE]

L4: 6 of 7

SUMMARY:

BSUM(23)

U.S. Pat. No. 4,772,526 discloses photoconductive layer assemblies for electrophotographic systems in which the top layer, either the charge transport layer or the charge generation layer, comprises a block copolymer of a **fluorinated polyether** and a polyester or a polycarbonate. The surface exhibits good toner release properties because of the presence of the **fluorinated polyether**.

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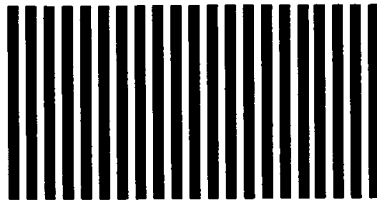
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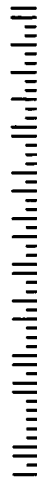
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DETDESC:

DETD(36)

The release entity in either the self-releasing dielectric polymer or the release material in a mixture may be chosen from polymers containing fluorinated moieties such as **fluorinated polyethers**.

DETDESC:

DETD(236)

The preferred **organopolysiloxane**-polyurea block polymers comprise a repeating unit of the Formula I: ##STR3## where: Z is a divalent radical selected from the group consisting of phenylene, alkylene, aralkylene and cycloalkylene;

DETDESC:

DETD(245)

The **organopolysiloxane**-polyurea block polymer useful in the present invention must be organic non-aqueous solvent-compatible. As used herein, "compatible" means that the copolymer is soluble in organic solvent (only in non-aqueous solvents). The water-compatible polymers contain ionic groups in the polymer chain and are not satisfactory when coated on dielectric material as a functional toner release material. Upon drying the water is removed, leaving the polar non-Silicone segment (Quaternary amine) on the surface, and the Silicone is left almost totally submerged under the polar non-silicone layer; thus not sufficient Silicone on the contact surface with the toner(s) and thus no toner(s) release capabilities upon attempted transfer of image.

DETDESC:

DETD(256)

Specifically solvent-compatible block polymers useful in the invention may be prepared by mixing the **organopolysiloxane** diamine, diamine and/or dihydroxy chain extender, if used, and diisocyanate under reactive conditions, to produce the block polymer with hard and soft segments respectively derived from the diisocyanate and **organopolysiloxane** diamine. The reaction is typically carried out in a reaction solvent.

DETDESC:

DETD(257)

The donor element of the invention may be prepared by a variety of techniques. Preparation of the donor element may be easily accomplished but the surface to be treated must first be cleaned of all dirt and grease. Approved cleaning techniques may be used. The surface is then contacted with the solution of **organopolysiloxane**-polyurea polymer by use of one of a variety of techniques such as brushing, bar coat, spraying, roll coating, curtain coating, knife coating, etc.; and then processed at a time for a temperature so as to cause the polymer to form a dried layer on the surface. For image release coatings a suitable level of dried coating thickness is in the range 0.05 to 2.0 micrometers, with a preferred thickness range of 0.08 to 0.3 micrometers, and with best success at about 0.12 to 0.18 micrometers.

US PAT NO: 4,962,178 [IMAGE AVAILABLE]

L4: 7 of 7

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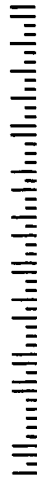
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SUMMARY:

BSUM(7)

The use of silanol terminated polydimethylsiloxanes has been reported in the modification of polysiloxanes with polyurethanes (Moretto, U.S. Pat. No. 4,202,807) to improve the mechanical properties of the former at elevated temperatures. No mention was made of the hydrolytic stability of the O-silylurethane bond in these materials. The only other mention of this bond in a polymeric material was made by Kaufman, Muller, and Wegchaupt (U.S. Pat. No. 4,292,423 in the preparation of **organopolysiloxanes** for coating purposes. However, when the claimed **organopolysiloxane** was prepared entirely through the reaction of siloxane groups with isocyanate groups (Example 1 of this patent), the coating was decomposed by atmospheric moisture and addition of 75% by weight of the polyurethane, Desmodur L, was necessary to produce a hydrolytically stable coating.

DETDESC:

DETD(21)

It is therefore within the scope of the present invention to use as polysiloxanes prepolymer obtained from polysiloxanes of structures A.sub.1 and A.sub.3 by chain-extension reactions commonly used by those skilled in the art of polycondensation, especially polyurethane chemistry. Such chain extensions can be achieved by instance by polycondensation of the aforementioned polysiloxane diols, with: diacid chlorides or anhydrides or dianhydrides, such as terephthaloyl chloride, adipic acid dichloride, maleic anhydride, phthalic anhydride or benzophenone-tetracarboxylic acid and dianhydride, but preferably with diisocyanates of the structures mentioned above, in which case the synthesis step for preparing the NCO-capped prepolymer as described is simply carried out with less than a 2:1 excess of NCO over --OH--groups, likewise, the NCO-terminated prepolymers obtained before the final capping step is carried out with the hydroxy-vinyl compounds, can be chain extended with diols or diamines according to the known techniques of polyurethane technology, with for example, ethylene glycol, propylene glycol, butanediol, hexanediol or polyetherdiols containing ethyleneoxide, propylene oxide or n-butylene oxide repeating units or **fluorinated polyether** groups; polyester diols ethylenediamine, hexanediamine and diprimary or di-secondary amines in general, including diamines derived from polyalkylene oxides. To the extent that through these chain extension reactions additional amide, urethane or urea groups are introduced into the structure, they contribute by hydrogen-bonding to the rigidity and clarity of the polymer. Chain extensions of the sort just described, however, dilute the overall polysiloxane extent of the polymer and therefore lower the oxygen permeability in the final polymer.

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(FILE 'USPAT' ENTERED AT 15:56:15 ON 09 JUN 1999)
 L1 0 S REACTIVE FLUORINATED POLYETHER#
 L2 263 S FLUORINATED POLYETHER#
 L3 5501 S ORGANOPOLYSILOXANE#
 L4 7 S L2 AND L3
 L5 0 S L2 AND L3/TI
 L6 0 S L2(5A)L3/TI
 L7 0 S L2(10A)L3/TI

09 Jun.09 Jun. 1999; 16 00

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Art Unit: 1711

EXAMINER'S AMENDMENT

1. An examiner's amendment to the record appears below. Should the changes and/or additions be unacceptable to applicant, an amendment may be filed as provided by 37 CFR 1.312. To ensure consideration of such an amendment, it MUST be submitted no later than the payment of the issue fee.

This application has been amended as shown below:

Cancel claim 5, which is now a duplicate of amended claim 1.

Authorization for this examiner's amendment was given in a telephone interview with Attorney Kenneth S. Wheelock on May 07, 1999. 2.

2. Any inquiry concerning this communication or earlier communications from the examiner should be directed to U. K. Rajguru whose telephone number is (703) 308-3224. The examiner can normally be reached on Monday-Friday from 9:30-6:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, James Seidleck, can be reached on (703) 308-2462. The appropriate fax number for the organization where this application or proceeding is assigned is (703) 305-3599.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0661.